

suits both the object and the image of the cross; also by cutting divided scales on the diaphragm glass, useful estimates may be made of both distance and windage.

In an experiment made on a gun-sight, kindly lent to the writer of this article by Sir Howard Grubb, good shooting was made on a white target when it was dusk, and an ordinary fore-sight could not be seen, by illuminating the cross, by a minute reflected side-light, entirely shielded from view from the locality of the target. This form of gun-sight could thus be used, in certain circumstances, long after the ordinary fore-sight had become invisible.

A very small diminution of light coming from the object is produced by the deposit of galena on the mirror, but it is so minute, that it practically causes no inconvenience to the marksman when aiming a rifle at a distant object.

NOTES.

PROF. ALBERT GAUDRY has been elected vice-president of the Paris Academy of Sciences for the year 1902.

THE Symons Gold Medal of the Royal Meteorological Society will be presented to Dr. A. Buchan, F.R.S., at the annual meeting of the Society to be held on Wednesday, January 15.

WE regret to see that Prof. Virchow met with an accident on Saturday evening while alighting from an electric tramway car in Berlin. The injuries are described as a wrench to the hip joint and various contusions on the legs, in consequence of which Prof. Virchow will for a long time be confined to his room.

THE Commissioners of the Northern Lighthouses have decided to adopt wireless telegraphy as a means of establishing communication between the mainland and certain of their lighthouses. The first installation will be at the Flannan Islands, which are situated about sixteen miles outside the west coast of Lewis. The installation, which will be made in conjunction with Lloyd's shipping agency, will be on the Marconi system.

THE New York *Electrical Review* for December 21, 1901, contains some interesting particulars concerning Mr. Marconi's recent success in transmitting signals across the Atlantic by wireless telegraphy. It appears that before leaving England Mr. Marconi made arrangements for having the letter "S" signalled repeatedly at frequent intervals for three hours daily from his transmitting station at Poldhu. The power of the transmitting arrangements in Cornwall had been increased considerably since Mr. Marconi had succeeded in bridging a distance of 200 miles. At St. John's there was only a temporary station, the aerial wire being suspended from a kite at an altitude of about 400 feet. The transmitting and receiving arrangements were carefully tuned, the receiver being of a new type recently developed. On December 14 a succession of "S's" was received with unmistakable distinctness, and a similar series was received on the next day, but this time not quite so distinctly. Mr. Marconi attributes the variability partly to fluctuations in the height of the kite, bad weather prevailing at the time, and partly to the fact that the receiver had to be extremely sensitive and required constant adjustment. The erection of a permanent station in America and the increase in the power of the transmitters should remedy these two defects. It is now almost exactly 150 years since Franklin's classical experiment with a kite, which now, therefore, figures for a second time as important in the history of electrical development.

THE following news from Baron Toll's Arctic Expedition was received by the chief of the Central Meteorological Observatory at St. Petersburg, in a telegram, dated Yakutsk, December 4/17:—

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"On September 11/24 caught by winter in Nerpichiya Bay, 75° 22' N. and 137° 16' (E. longitude). From November 1 have opened meteorological station, with hourly observations. All right, all well. Sending greetings to Central Observatory. *Zarya*, October 25 (November 7), 1901." It will be remembered that the expedition started last summer on board the steamer *Zarya* with the intention of wintering somewhere on the Arctic coast of Siberia, so as to begin in the spring the exploration of the New Siberia Islands.

THE Russian newspapers publish the following official telegram, dated Yakutsk, December 28:—"The expedition which was sent out by the Academy of Sciences, under the zoologist Hertz, to examine the mammoth remains discovered in the district of Kolymsk, has reached Sredne Kolymsk, after a very difficult journey, bringing the mammoth with it. The animal was a male and apparently middle-aged. Its skeleton and skin have been preserved nearly intact. The tail was short and covered with long hair. In the stomach, between the teeth and on the tongue, remains of undigested food were found. The different parts of the mammoth have been conveyed to St. Petersburg in a frozen condition."

THE eleventh Congress of Russian Naturalists and Physicians was opened at St. Petersburg on January 2 by the Grand Duke Alexander of Oldenburg. The number of people anxious to take part in the Congress was very large, more than 3250 members' tickets having been taken on the day of opening. The Minister of Public Instruction has given a sum of 500% to defray the expenses of the Congress, and both the Municipality of St. Petersburg and the University have contributed large sums for the same purpose. At the first general meeting of the Congress, the president (Prof. Menshutkin) spoke about the foundation of a Russian Association for the Advancement of Science, which would hold regular congresses every year. This proposal was accepted by a congress held eleven years ago; but the Ministry of Public Instruction was hostile to the idea, and only now the new Minister, General Vannovsky, has agreed not to oppose it. At the same general meeting Prof. S. M. Lukianoff delivered an address on the limits of cytological research under normal and pathological conditions, in which he endeavoured to establish the limits of psycho-physiology; and Prof. N. A. Umoff delivered a brilliant address on a physico-mechanical model of living matter.

THREE pleasure cruises have been arranged by our contemporary the *Revue générale des Sciences* to take place this year. At Easter there will be an excursion to Greece and the Greek Isles, in charge of M. C. Homolle, director of the French School at Athens, and M. G. Fougères, of the University of Paris. At the end of September there will be a trip to Syria and Palestine, directed by M. C. Diehl, and in November an excursion will be made to Egypt, up to the second cataract, under the direction of a well-qualified Egyptologist.

ON Tuesday next, January 14, Prof. A. Macfadyen will deliver at the Royal Institution the first of a course of six lectures on "The Cell, its means of Offence and Defence, Immunity." On Thursday, January 16, Dr. A. S. Murray will begin a course of three lectures on "Recent Excavations at Delphi and in the Greek Islands." The Friday evening discourse on January 17 will be delivered by Lord Rayleigh, his subject being "Interference of Sound." On January 24 Mr. H. G. Wells will give a discourse on "The Discovery of the Future," and on January 31 Prof. A. Crum Brown one on the "Ions of Electrolysis."

THE Decimal Association has sent us a list of 172 members of Parliament who have notified their approval of the compulsory adoption of the metric system of weights and measures into Great

Britain, and have promised to give their support to any measure brought forward with this end in view. The Association points out that, in the interests of our foreign trade, it is most desirable that we should at once carry this reform into effect, as the constantly reiterated statements of British consuls prove that much trade is lost because our weights and measures are not understood in countries where the metric system is in force. In Australia, Canada and Cape Colony the change would be welcomed; and seeing how easily so serious an impediment to commerce can be removed, it is hoped that the Government will give more attention to the subject in the coming session of Parliament than it has so far done.

It is announced that a large sum of money—about 200,000*l.*—has been placed at the disposal of His Majesty the King for charitable or utilitarian purposes by Sir Ernest Cassel. This money, by the King's direction, is to be devoted to the erection of a sanatorium for tuberculous patients in England. For the carrying out of this purpose His Majesty has appointed an advisory committee consisting of Sir William Broadbent, Sir Richard Douglas Powell, Sir Francis Laking, Sir Felix Semon, Sir Hermann Weber and Dr. C. Theodore Williams, with Dr. Horton-Smith and Dr. John Broadbent as honorary secretaries. The institution is to accommodate 100 patients, and will be fully equipped with all requirements for scientific research. In fact, it is intended to construct the sanatorium on the best lines which past experience and original thought can suggest, and in order to obtain the most valuable opinions a sum of 800*l.* will be awarded in prizes for the best essays and plans upon the subject. Medical men of all nationalities may compete. The papers may either be the work of a medical man or the joint production of a medical man and an architect. All essays and plans must be sent, postage paid, on or before April 15, 1902, to one of the secretaries of the committee:—Dr. P. Horton-Smith, 15, Upper Brook Street, London, W.; or Dr. John Broadbent, 35, Seymour Street, London, W. Three money prizes, of 500*l.*, 200*l.* and 100*l.* respectively, will be awarded in order of merit on the recommendation of the advisory committee for the three best essays, provided they come up to the requisite standard of excellence.

AN astronomical observatory has been erected and equipped by the Bengal Government at the Presidency College, Calcutta, and was opened a few days ago. The idea of providing means for the instruction of Indian youths in practical astronomy was conceived about five years ago, when the Maharaja of Tipperah presented to the Presidency College an equatorial telescope by Grubb, 4½-inch aperture. On Dr. J. C. Bose's representation, the Government of Bengal agreed to provide a building suitable for observations. But it was not until after the eclipse of January, 1898, when the professional and amateur astronomers who visited India caused active interest to be taken in building the observatory. From an article in the *Pioneer Mail* we learn that the chief instrument of the observatory is a 7-inch equatorial by Sir Howard Grubb, with an electrically controlled driving clock and with electric lights for all the graduated circles. The telescope will generally be used for eye observations, but the object-glass may be adapted to photography, and the mounting of the telescope is of a strength that will admit of its being used for spectroscopic examination of the sun or the brighter stars. The equipment will allow a considerable number of students to become familiar with the elements of astronomy in its most practical form. It is hoped that the Presidency College Observatory will yet be equipped with more instruments through private liberality.

THE Geological Survey of the Colony of the Cape of Good Hope has recently been working in Pondoland, and has secured a very fine collection of fossils from the Cretaceous rocks which

occur along the coast near Natal. The most interesting find of all was one of a pair of lower jaws belonging to a large reptile allied to *Mosasaurus*. The large trenchant teeth are set, each in a cylindrical socket and arranged in such a way that there is a series of teeth firmly ankylosed to the socket and other successional teeth that are loose and have fallen into the hollow of the fixed teeth. Many detached bones were also found, but the whole deposit is littoral, and very little can be made out of these, as they have been much rolled about on a shingle beach before becoming imbedded. With the *Mosasaurus* bones there are numbers of flat plates belonging to the bony carapace of a turtle such as *Protosphargis* as well as such characteristic chelonian bones as the Y-shaped one composed of the scapula and procoracoid. A large number of sharks' teeth occur between the pebbles belonging to the genera *Corax*, *Lamna*, *Otodus*, *Enchodus*, *Odontaspis*, and a single *Elasmobranch* vertebra was found. Between sixty and seventy genera of Mollusca were obtained, including many finely preserved examples, some of which are new to science and a great many new to South Africa. Echinoderms and Polyzoa also occur, and eight species of Foraminifera, belonging to the genera *Vaginulina*, *Nodosaria*, *Virgulina*, *Discorbina*, *Truncatulina*, *Textularia*. The collection is now in the South African Museum, Cape Town, where the greater part is exhibited.

ALMOST nothing is known of the amount of rain on the mountains in Arctic regions. Mr. Hamberg has placed large permanent pluviometers on some high mountains in Swedish Lapland and has observed that much more snow and rain fall there than in adjacent low ground.

IN the *Popular Science Monthly* for December, 1901, Mr. H. Helm Clayton, of the Blue Hill Meteorological Observatory, discusses the influence of rainfall on commerce and politics. He gives a table of the annual departure from the normal rainfall in the Ohio and Mississippi valleys for a large number of years, showing, not only that every severe financial panic has been closely associated with persistent deficiency of rainfall, but that (with one exception) no period of protracted drought has occurred without a financial panic.

The *Geographical Journal* for November last contains a paper by Mr. H. N. Dickson on the mean temperature of the atmosphere and the causes of glacial periods. The conclusions of the author tend to show that considerably smaller changes of temperature and of the distribution and amount of precipitation, caused by the assumption of a lowering of mean temperature taking place by cooling in the polar regions, than has generally been supposed, enable us to account for the nature and distribution of glacial phenomena, as they are at present known to us.

THE only countries which took part in the international balloon ascents during September, October and November were Austria, France, Germany and Russia. Some of the greatest altitudes were attained from M. Teisserenc de Bort's observatory at Trappes, near Paris:—On September 5 (night ascent), 14,178 m., temperature $-55^{\circ}2$ C., on ground $5^{\circ}6$; on October 3 (night ascent), 14,500 m., temperature -58° , on ground $8^{\circ}1$; (day ascent) 13,150 m., temperature -53° , on ground 11° ; November 7 (night ascent), 13,200 m., -62° , on ground $2^{\circ}4$. From Berlin, on this day, an altitude of 12,010 m. was attained, temperature $-58^{\circ}4$, ground $6^{\circ}5$. A manned balloon which left Berlin, height 1100 m., temperature $+1^{\circ}$, experienced a wind velocity of 80 kilometres (50 miles) an hour.

IN our notes columns we recently directed attention (p. 110) to a paper by Prof. Lebedew in which he described an experimental investigation of the pressure of light radiation. We have now received a paper on the same subject, by Messrs.

E. F. Nichols and G. F. Hull, which was read at a joint meeting of the American Physical Society and the American Association for the Advancement of Science on August 29, 1901, and is published in the *Physical Review* for November last. The experimental methods adopted by Messrs. Nichols and Hull are similar to those employed by Lebedew, the chief difference being that whereas the former used a bolometer to measure the incident energy the latter employed a calorimeter, but the investigation is not as yet of so complete a nature. The observations already completed are, according to the authors, sufficient to prove experimentally the existence of a pressure of the nature and order of magnitude of radiation pressure. The results agree to within about 30 per cent. with the theoretical value: a certain amount of inexactness is introduced as the authors did not experimentally determine the reflecting power of the vanes employed. Lebedew in his investigation claims to have obtained results agreeing to within 10 per cent. with the calculated values of the Maxwell-Bartoli pressure.

IN view of the trials now being made by one of the London water companies with ozonised air as an agent for water purification, the following details of the experimental plant erected by Siemens and Halske at Martinikenfelde, near Berlin, are of interest. This plant was erected in 1898, and is adapted for treating 240 cubic metres water per twenty-four hours. The ozonisers are of the Siemens and Halske plate and tube type, and yield 20-25 grams ozone per E.H.P. hour, with an E.M.F. of 12,000 volts. The air passing from the ozonisers under these conditions contains $2\frac{1}{2}$ -3 grams ozone per cubic metre. An air-pump is used to force the air through the drying chamber into the ozonisers, and it passes thence into the sterilising tower. This tower is a simple square structure packed with flints, and as the ozonised air passes upwards it comes into contact with a descending stream of water. The remainder of the plant at Martinikenfelde consists of a water-pump, a sand filter for preliminary filtration of the water with which the sterilising tower is fed, and various storage tanks for the filtered and unfiltered water. Tests made with water from the River Spree show that the numbers of bacteriological organisms were reduced from 600,000 to 10 per cubic centimetre. The permanganate absorption figure was reduced 18 per cent., and the aëration of the water was increased from 10 per cent. to 12 per cent. The consumption of ozone amounted to two grams per cubic metre. The cost of treatment for an installation treating 120-150 cubic metres per hour was estimated to be 1.726 pfg. per cubic metre, and the total cost, when interest and depreciation charges on the distributing system are included, 5.031 pfg. per cubic metre (equal to 1s. 5d. per 1000 cubic feet). The capital outlay upon an installation capable of treating 150 cubic metres per hour was estimated to be 6750*l.*, of which total 3750*l.* represented the expenditure upon the ozonisers and sterilising tower. Further details will be found in an article by Dr. Erlwein in the *Zeitschrift für Electrochemie*, November 14, 1901.

MR. SEALE, in *Occasional Papers* (vol. i. No. 4) of the Bernice Pauahi Bishop Museum, Honolulu, describes and figures several new Hawaiian marine fishes.

IN the *Comptes rendus* of the Swiss Society of Natural Science for 1900 Dr. Fatio adds two vertebrates—the lesser shrew (*Sorex pygmaeus*) and the Grecian frog (*Rana graeca*)—to the fauna of Switzerland.

IN an article published in the *Revue Scientifique* (*Revue Rose*) of December 28, 1901, M. Hugo de Vriès discusses the mutations of species and the periods required for such mutations. He mentions that since certain plants have apparently remained unaltered since the date of the building of the pyramids

(approximately 4000 years), this period may be taken as a minimum unit in estimating the time required for specific modification.

TO the eighty-third volume of the *Verhandlungen* of the Swiss Naturalists' Society Prof. C. Keller communicates a very interesting dissertation on a peculiar breed of domesticated sheep with goat-like horns formerly kept by the natives of the Bünden Oberland, Switzerland, and hence locally known as the Biindnersch. The breed is known to be of great antiquity, but now appears to be almost exterminated owing to crossing with other strains. In 1862 the late Prof. L. Rütimeyer called attention to the peculiarity of this breed, and indicated its near affinity with the so-called peat-sheep (*Torfschaf*) of the Swiss lake-dwellings, of which it appears to be the direct descendant. The author expresses the hope that efforts may be made to save the breed from extinction.

WE are glad to have the pleasure of congratulating the editor of the *Zoological Record* on the completion of the volume for 1900. Year by year his task grows more onerous, the volume before us exceeding its predecessor by 180 pages. Very noticeable is the length of the list of new generic and subgeneric names, which contains no less than 2102 entries, the maximum having been previously 1707, in 1895. The increase in the bulk of the volume is largely due to the insect record, which comprises 354 pages against 276 in 1899. The yearly growth in the size of the volume is, of course, largely to be attributed to the practice of naming local races of animals, which has come so largely into vogue of late. The various recorders appear to have done their work with great care and thoroughness, although we notice in the mammal part that one paper (No. 200) is credited to a writer other than its author. Uniformity in regard to the "introduction" to the different "records" is still a desideratum, this important element being altogether omitted in some instances, while in one case it has been allowed to reach an altogether disproportionate length. It is a decided improvement in the "get-up" that in this year's issue the edges have been cut. We are glad to hear that there is a good prospect of the promised "index volume" of generic names making its appearance early in the year.

NONE have laboured more earnestly on the land and freshwater Mollusca of Pleistocene and recent times in Britain than Messrs. A. S. Kennard and B. B. Woodward. Their latest work, "The Post-Pliocene Non-Marine Mollusca of the South of England," has just been published by the Geologists' Association (*Proc.* vol. xvii. November 1901). In this the lists from various localities have been carefully checked and revised whenever possible from an examination of the actual specimens recorded. Doubtful records are omitted from the general list, in which are tabulated the species from seven Pleistocene and thirteen Holocene localities. There is also a column showing the species which occur in Pliocene deposits, and another giving all the living British species. Of the 139 living species no less than 129 occur in the south of England, and of the ten extinct forms seven have been found in the same area. The authors have expressed their opinion that the Pleistocene molluscan fauna was a finer one than that of to-day. The non-marine Mollusca have reached this country from various sources. In their opinion a large number are boreal, and of these some travelled hither along the now sunken land to the north of Scotland, whilst others may have journeyed through Siberia and the Continent; some have come from the south by the old land connection between England and the Continent; while others, the so-called Lusitanian forms, have reached us from south-west Europe; a few species may be endemic. Some changes in nomenclature are noted, but the authors justly remark that the identity of the shell is of more

importance than the absolute correctness of the name from a "priority" point of view.

IN *Publication* No. 56 of the Field Columbian Museum Dr. G. A. Dorsey describes the results of a fortnight's digging in the island of La Plata, Ecuador. It seems probable that for a very long period the island was visited by people from the mainland for ceremonial purposes, as none of the pottery appears to have had any utilitarian use, practically all being of the nature of images of the human form ranging in height from six to twenty inches, and most of them were provided with whistles. There were found numerous engraved and plain rectangular and circular discs and other problematical objects. In a tongue of detrital soil near the shore was found a grave which, from its contents, belonged to another occupation of the island, and there can be little doubt that invaders from Peru previous to the Spanish conquest were buried in this little island so remote from their home. In the grave excavated by Dr. Dorsey were found two gold human figures, one of silver, one of bronze and one of copper, besides a gold cup and several objects in gold, silver and copper, twelve earthenware vessels and a magnificent ceremonial highly polished stone axe, 19½ inches long and less than three-quarters of an inch thick, which may be considered as one of the most remarkable stone implements ever found. The paper is illustrated with sixty-three excellent plates and several figures. The letterpress is exceptionally condensed; a little more amplification would have been an improvement, and the sizes of the objects should have been given. An English observer fails to see why what appears to be a very evident alligator which surmounts a fragment of a human head in pottery should be termed a "serpent head-dress." The prominent valvular nostrils, the character of the eye, the keeled dorsal scutes and the limbs are essentially crocodilian, as is also the prominent lateral tooth in the upper and lower jaw; the latter cannot be the "projectile fangs of a serpent."

At a recent meeting of the Linnean Society, Prof. S. H. Vines gave the results of his recent investigations of the proteolytic enzymes of plants, especially that of the pitchers of *Nepenthes*. The application of a chemical test—the pink or violet colour produced by the addition of chlorine water—shows that the enzyme in *Nepenthes* is tryptic, and not peptic; and this is probably the case with all ferments found in the vegetable kingdom. Prof. Vines proposes the term *nepenthin* for the ferment of *Nepenthes*.

THE *Journal* of the Royal Microscopical Society for December, 1901, contains the usual annual list of new biological terms (zoology and botany) introduced during the year. In the *Transactions* of the Society is a paper by Miss A. Lorrain Smith, on work carried on in the laboratory of the Royal Agricultural Society, on fungi found on farm seeds when tested for germination. A new genus of fungi, *Stemphyliopsis*, is described.

THE bulky part of the *Journal* of the Royal Horticultural Society for December contains a full report of the Lily conference held in the Gardens at Chiswick on July 16, 1901. The wide spread of the lily-cult is shown by the fact that at that meeting no fewer than eighteen papers were read, on the culture of lilies, their species and varieties, their diseases, &c. The most important original paper in this number is one by Sir James Blyth, on vine culture as exemplified at the Paris Exhibition.

THE Imperial Department of Agriculture for the West Indies has just published pamphlet series Nos. 12 and 13. The former, "Seedling and other Canes in the Leeward Islands, 1900-1901," is a summary of the report on sugar-cane experiments conducted at Antigua and St. Kitts recently noted here.

The other, "Seedling and other Canes at Barbados, 1901," is a summary of an address delivered to the Barbados Agricultural Society by Prof. D'Albuquerque and Mr. Bovell, giving the results of the experimental cultivation of selected canes during last year. In the earlier stages of the experiments the weather seems to have been all that could be desired, and things looked so promising that a bumper crop was predicted; but at the critical moment, when good rains were essential for the complete fulfilment of the prediction, an all but universal drought settled down on the island and lasted until the canes were reaped. When the harvest time arrived the wind dropped so light that the wind-mills could not be worked. The canes were therefore growing long after they ripened, and when cut they were often standing some days at the mill door waiting for the wind to crush them. This combination of adverse weather had much to do with the poor quality of sugar that in many instances was turned out for sale. Seedling B. 208 proved the best all-round cane, the indicated muscovado sugar yield being 2·6 tons per acre (being second in 1900 with 3·02 tons). White Transparent was second with 2·5 tons (in 1900 it was eighth with 2·41 tons), and B. 147 third with 2·4 tons (in 1900 first, with 3·1 tons). B. 156, B. 306, B. 347 and Rock Hall cane produced impure juice and D. 130 and D. 145 yielded such a small tonnage of canes that their further experimental cultivation is undesirable.

MESSRS. PENROSE AND CO. have sent us a copy of their new, strongly bound and most luxurious catalogue of their apparatus and supplies, which contains particulars of almost every appliance or material known to be used in photo-mechanical processes, and is the most complete catalogue of process appliances with which we are acquainted. The book, which consists of 272 pages of matter printed on excellent paper, contains also 750 illustrations, many of which are by the half-tone process, and there are also 1260 references in the index. It may be added that the catalogue is supplied free of charge to regular customers and will be sent to prospective customers on receipt of half a crown, which will be refunded on the first order for goods to the value of one pound or upwards.

A VALUABLE collection of books and tracts on pure mathematics exists in the Central Library, Newcastle-upon-Tyne, and the catalogue prepared by Mr. Basil Anderton, chief librarian, and just issued by the Newcastle Public Libraries Committee, should be the means of making the collection more widely known than it is. Only works on purely mathematical problems are included, but the extent of the collection may be judged by the fact that the titles of such books and tracts in the reference library occupy forty-five closely printed quarto pages. The works are arranged alphabetically according to authors, and, so far as possible, related writings by the same author have been brought together. The committee of the Library is anxious that the books should be abundantly used, and the catalogue has been issued with this end in view.

THE Annual Report of the Smithsonian Institution for 1900 was received a few days ago, and, like the reports of previous years, it is a volume which commands admiration. The account, given by Dr. S. P. Langley, of the position and progress of the Institution occupies 117 pages and is naturally of restricted interest; but following it are no less than forty-three papers, occupying 643 pages, with numerous plates, selected from the scientific publications of the year because of their importance in illustrating directions of scientific thought, and containing trustworthy accounts of progress in physical and biological discovery. It is scarcely too much to say that every subject in which the world of science is interested finds its way in the course of time into Dr. Langley's comprehensive repertory. The articles which are reprinted or translated are chiefly by men of science of first

rank engaged in the extension of natural knowledge. The present volume contains reports upon scientific work, as, for example, those by Dr. Langley upon observations of the solar eclipse of May 28, 1900, the new spectrum, and the Langley aërodrome; scientific articles from magazines, as Sir Norman Lockyer's account of the progress of astronomy during the nineteenth century, Prince Kropotkin's article on unsuspected radiations, and the late Dr. J. Fiske's reminiscences of Huxley; presidential addresses, as Prof. W. J. Sollas's address on evolutionary geology, delivered before the British Association in 1900, and Dr. G. M. Sternberg's address on malaria; several papers read before scientific societies, as one by Prof. V. B. Lewes on incandescent mantles, and Mr. E. S. Grogan's paper, read before the Royal Geographical Society, on his journey through Africa from the Cape to Cairo; original articles on Chinese folklore, and the restoration of extinct animals, and several translations, among which we notice a paper by Dr. Janssen on the progress of aëronautics, and one by Dr. F. Delitzsch on discoveries in Mesopotamia. In addition to these articles there are a number of others dealing with the progress of various branches of science during the nineteenth century. We are grateful to Dr. Langley for collecting these contributions to scientific literature from many sources and rendering them easy of access in his annual anthology.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus*) from India, presented by Mr. L. E. Carmalt; a Macaque Monkey (*Macacus cynomolgus*) from India, presented by Mr. W. H. Sheridan; a Black-eared Marmoset (*Hapale penicillata*) from South-east Brazil, presented by Mrs. Augusta Ryland; a Common Squirrel (*Sciurus vulgaris*), British, presented by Mr. R. B. Hatfield; a Red-faced Spider Monkey (*Ateles paniscus*) from Guiana, a Barnard's Parrakeet (*Platyercus barnardi*) from South Australia, five Conical Eryx (*Eryx conicus*), a Long-snouted Snake (*Dryophis mycterizans*), a Hamilton's Terrapin (*Damonia hamiltoni*) from India, two Black-headed Terrapins (*Damonia reevesi unicolor*) from China, deposited; two Coscoroba Swans (*Coscoroba candida*) from Antarctic America, purchased.

OUR ASTRONOMICAL COLUMN.

THE ANNULAR ECLIPSE OF THE SUN, NOVEMBER 11, 1901.—The successful observation of this eclipse by M. A. de la Baume Pluvinel at Cairo was announced by telegram some time ago, and his complete report of the operations appears in the *Comptes rendus* (vol. cxxxiii. pp. 1180-1185). Although the results were in general successful, the conditions were somewhat unfavourable owing to the low altitude, about 15°, of the sun at mid-eclipse.

Three lines of investigation were attempted.

(1) The examination of the solar spectrum at grazing incidence on the moon's surface. This was done with a powerful grating spectrograph, using an image of the sun about 14 mm. diameter on the slit plate. No variation in the various groups of lines examined could be detected, and it was concluded that this rendered the existence of any lunar atmosphere extremely improbable.

(2) Photographs of the crescents presented at second and third contacts were obtained in the hope of detecting any difference in constitution between the chromosphere and the outer photospheric layers. These were taken with a small prism spectrograph, having an image of the sun about 14 mm. diameter on the slit plate. A considerable number of arcs were obtained, and a list is given showing their wavelengths in comparison with Young's chromospheric lines. The main series of arcs corresponded to a chromospheric layer about 20" of arc in height, but beside these there appeared a series of more feeble images corresponding to a layer some 40" high. The

absence of the hydrogen series so conspicuous in the chromospheric spectrum is attributed to the mutual action of chromospheric radiation and photospheric absorption.

(3) Attempts to photograph the corona in presence of sunlight. This had appeared feasible in consequence of the impressions obtained several seconds after totality during the eclipse of January 1898, in India. For this work he employed a Cooke triple photo-visual objective of 1.5 metres focal length. This instrument and the image lenses of the two spectrographs were fed by 3 plane mirrors mounted on a single coelostat.

As the diameters of sun and moon differed by 1' 24" there were about 16/100ths of the sun's disc still visible at mid-eclipse. Two photographs, with 3 seconds and 10 seconds exposure, were obtained, but the aureole shown is not thought to be truly coronal.

Attempts were also made to detect the corona by utilising the action of the calorific rays on phosphorescent substances, but with negative results.

THE MAMMALS OF NORTH AMERICA.

AMONGST the recently issued publications of the Field-Columbian Museum of Chicago we find a list of the land and sea mammals of North America, north of Mexico, prepared by Mr. D. G. Elliot, curator of the department of mammals in that institution. The list is stated to contain the names of all the forms of North American mammals found on land or in the adjacent seas which had been described up to the date of publication (June 10, 1901), at any rate all those that "under the most lenient treatment are entitled to any sort of consideration." This most useful catalogue serves to show us very plainly the great activity of the American zoologists in this particular department of their science during recent years. In the late Prof. Baird's work on North American mammals, published in 1857, only 220 terrestrial species of this class (not including the bats) were recognised as occurring in the northern portion of the American continent, besides thirty-six others which were considered as of doubtful authenticity. Mr. Elliot's list contains the names of 628 species besides 368 subspecies, so that, if we take it as correct, the number of recognisable forms of North American mammals has been enormously increased of late years. It will be interesting to ascertain in what groups of the class of mammals this great augmentation has mainly taken place. This is shown in the following tabular statement:—

		Elliot, 1901			Baird, 1857
		Sp.	Subsp.	Total	Sp.
Order	i. Marsupialia	2	1	3	2
"	ii. Edentata	1	—	1	1
"	iii. Sirenia	2	—	2	—
"	iv. Cetacea	46	2	48	—
"	v. Ungulata	25	11	36	15
"	vi. Rodentia	380	255	635	130
"	vii. Carnivora	88	62	150	46
"	viii. Pinnipedia	14	—	14	—
"	ix. Insectivora	47	22	69	26
"	x. Chiroptera	23	15	38	—
		628	368	996	220

In considering these figures it must be remarked that as Baird did not include the three groups of marine mammals or the Chiroptera in the scope of his work no complete comparison can be made. But it will be obvious, on a glance at the comparative tables, that it is the smaller mammals, the Rodents and Insectivores, that have so greatly increased in multitude, according to the present fashion of dealing with them. The Rodents, of which Baird only recognised 130 in North America, are now supposed to number 380 species, besides 255 subspecies,